1 Review for Mid-term Exam 2

Most frequently asked question about any exam: *How many questions are there on the exam?*

3 (on this exam)

Other facts about the organization:

- Exam takes 50 minutes.

- No written references or calculators are allowed. Pencils are encouraged.

- To receive any partial credit, show your work and comment any code.

2 Things to know for the Exam

(*an incomplete list*)

1. Generic datapath concepts

   - Tracing instructions through the datapath (*e.g.*, mark all wires active during the execution of add instructions)
   - Specifying control signal values for some instructions
   - Adding new instructions
   - Computing the cycle time for a given datapath

2. Single-cycle Datapath

3. Pipelining and the Pipelined Datapath

   - Ideal speedup and the reasons that it is not achieved
   - Dependences, data hazards, and forwarding (which cases can be handled)
   - Control hazards, branch resolution, branch prediction, and stalling

4. Performance

   - Components of processor performance: number of instructions, CPI, clock period
   - Computing speedup
   - Throughput vs. Latency
   - Amdahl's Law

5. Other topics

   - Floating Point Representations (single-precision IEEE 754)
   - Endianness (but we *don't* expect you to memorize which is little and which is big)
   - I/O programming and interrupts

6. Not until midterm 3: Caches